Richmond Public Schools
Curriculum Framework
Geometry

<table>
<tr><th colspan="2">Strand: Triangles</th></tr>
<tr><td>G.5</td><td>The student, given information concerning the lengths of sides and/or measures of angles in triangles, will solve problems, including practical problems. This will include
a) ordering the sides by length, given angle measures;
b) ordering the angles by degree measure, given side lengths;
c) determining whether a triangle exits; and
d) determining the range in which the length of the third side must lie.</td></tr>
<tr><th>Suggested Pacing</th><th>Cognitive Demand</th></tr>
<tr><td rowspan="2">Second Nine Weeks

4 instructional days (including assessment)</td><td>G..5a-d</td></tr>
<tr><td>Analyze</td></tr>
<tr><th>Spiraling Down Standards</th><th>Spiraling Up Standards</th></tr>
<tr><td>5.13 The student will
a) classify triangles as right, acute, or obtuse and equilateral, scalene, or isosceles; and
b) investigate the sum of the interior angles in a triangle and determine an unknown angle measure.</td><td>N/A</td></tr>
<tr><th>Essential Questions</th><th>Common Misconceptions</th></tr>
<tr><td>What are the angle relationships of a triangle?
Triangle Angle Sum Theorem: The sum of the three angles of a triangle is always 180°.
Exterior Angle Theorem: Any exterior angle of a triangle is always the sum of the two non-adjacent interior angles.

What conditions must exist for a triangle to be formed?</td><td>• There is a misconception that if there is a larger space between the two rays that make the angle, then the angle is larger. Show students by drawing an angle with short legs, then extend the legs and ask students if the angle measure changed.
• Students sometimes get confused with the term “opposite”. Draw arrows from the angles to the opposite sides so that students</td></tr>
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Triangle Inequality Theorem: The sum of the lengths of any two sides of a triangle is greater than the length of the third side. **What is the relationship between the measure of the angles and lengths of the opposite sides of a triangle?** *If one angle of a triangle is larger than another angle, then the side opposite (across from) the longer side is larger than the angle opposite the shorter side.* *The smallest side is opposite the smallest angle and the largest side is opposite the largest angle.*	understand what it means by "opposite". This will be imperative when discussing "opposite" in trigonometry. • Students think that triangles are always drawn a certain way (one point at the top and two points at the bottom and the bottom of a triangle is always flat). Make sure when giving examples to draw a variety of triangles so that students are exposed to the variations of positions. • Make sure students can classify triangles according to their sides (scalene, isosceles, and equilateral). Students can easily identify right triangles, but cannot identify triangles when they are marked scalene, isosceles, or equilateral.
Understanding the Standard	**Essential Knowledge and Skills**
● The longest side of a triangle is opposite the largest angle of the triangle and the shortest side is opposite the smallest angle. ● In a triangle, the lengths of two sides and the included angle determine the length of the side opposite the angle. ● In order for a triangle to exist, the length of each side must be within a range that is determined by the lengths of the other two sides.	**The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to** • Given information about the lengths of sides and/or measures of angles in triangles, solve problems, including practical problems (a, b, c, d) • Order the sides of a triangle by their lengths when given information about the measures of the angles. (a) • Order the sides of a triangle by their lengths when given information about the lengths of the sides. (b) • Given the lengths of three segments, determine whether a triangle could be formed. (c) • Given the lengths of two sides of a triangle, determine the range in which the length of the third side must lie. (d)

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Geometry

Vocabulary		
Isosceles	Triangle Inequality Theorem	Range
Scalene	Equilateral	Exterior Angle
Interior Angle	Inequality	Opposite
Triangle Angle Sum Theorem	Exterior Sum Theorem	

Assessment

1. PowerSchool Assessments
   G.5a Ordering Sides (E:2F7WPC)
   G.5b Ordering angles (E:M0G14M)
   G.5c Triangle Exists? (E:2T0H80)
   G.5d Range (E:2AB7PM)

2. Mulligan Checkpoint G.5
   Checkpoint G.5

3. Formative Assessments (paper)
   G.5a-d FA

4. Cumulative Assessment #4 (SOLs G.1, G.2, G.3, G.4, G.5, G.12)
Cumulative Assessment #4

Instructional Activities Organized by Learning Objective

Virginia Department of Education

- How Many Triangles?

Textbook

- Geometry, ©2012, Price, et al, McGraw-Hill School Education Group page(s) 359-366

Notes and Homework

G.5a-d Notes and Keys
G.5a-d Homework and Keys

Resources

- **Print**
  - Coach book, Virginia edition Lesson 14 page(s) 114-121
- **Technology**
  - **Gizmos**
    - Triangle Inequalities
  - **Investigations(Desmos & Geogebra)**
    - **Triangle Inequality Desmos Discovery Activity**
    - **Triangle Inequality Geogebra Discovery Activity**
  - **Youtube Videos**
    - G.5c and d explanation
    - Classifying Triangles (Math Antics)
    - Ordering sides and angles of a triangle (Khan Academy)

	○ **Quizizz Practice** ▪ G.5a Practice ▪ G.5b Practice ▪ G.5c Practice ▪ G.5d Practice **Instructional Activities** G.5a Practice Worksheet G.5b Practice Worksheet G.5c Practice Worksheet G.5d Practice Worksheet G.5 Word Problems Worksheet **Triangle Inequality Stations Sheets** ***Worksheets can be used as task cards at 6 different stations that pertain to problems from G.5a-d.**
Cross-Curricular Connections	**Tiered Interventions**
Real World: Triangles have been said to be the shape of mathematics, science, and nature. The importance of this shape is seen everywhere around us. In fact, they are especially important to builders, architects, and civil engineers. These people rely heavily on the knowledge of how to make perfect triangles, otherwise sturdy architectural structures would be hard to find. When Do We Use the Triangle Inequality in real life?	**Tier 3: Recall and Reproduction** Vocabulary Have students study flashcards, create their own flashcards, play a matching game or test themselves on Quizlet. Quizlet Flashcards Triangle Inequality **Tier 2: Basic Skills and Concepts** Practice and Drill Triangle Inequality Drills **Tier 1: Strategic Thinking and Reasoning** Application Discovering Triangle Inequality (non-technology)